

SWEDE'S HAZARD REPORT (HR) GOUGE

[NON-PRIVILEGED MESSAGE]
Please use Courier New and 12 pitch

FM YOUR SQUADRON

TO 3 Amigos (Always for HR & MR's not for MIR's)

CNO WASHINGTON DC//N88F//

CMC WASHINGTON DC//A/SD//

COMNAVSAFECEN NORFOLK VA//00/01/10/11/054//

COLLECTIVE ADDRESS DESIGNATOR (CAD)

Example: ALL SEA STALLION HELICOPTER ACTIVITIES

Example: ALL SEAKNIGHT HELICOPTER ACTIVITIES

OTHER COMMANDS IN ENDORSING CHAIN (IF NOT CONTAINED
IN THE CAD)

COMMANDING OFFICER OF NAVAL OR MARINE CORPS
AIRFIELD, SHIP OR FACILITY - Use only if personnel,
equip or facilities of that command are involved.

INFO

LSO SCHOOL NAS OCEANA VA//JJJ// - Use only if it
was an attempted carrier landing using an LSO.

HELSUPPRON EIGHT

HELSUPPRON THREE - Use both only if it was a
shipboard (carrier or small boy) mishap involving
an LSE.

COMNAVAIRWARCENWPNDIV CHINA LAKE CA//JJJ//

ALL AEROMEDICAL ACTIVITIES - Use both for aeromed
matters or aviation life support systems (ALSS) are
involved. OBOGS, HEEDS, SV-2, helo stroking seat.

HQ USAF WASHINGTON DC//SE//

HQ AFSC KIRTLAND AFB NM//SEF/SEG//

CDRUSASC FT RUCKER AL//PESC-Z//

COMDT COGARD WASHINGTON DC//G-WKS// - Use as
appropriately for your aircraft/common engine

NASA AMES MOFFETT FEDERAL AIRFIELD CA//ASRS// - **Use for all NMAC HAZREPs**

COMNAVMETOCCOM STENNIS SPACE CENTER MS//JJJ// - **Unusual weather** is involved

NAVAIRWARCENTRASYS DIV ORLANDO FL//JJJ// - **Simulator sickness** is involved

Select your (only one) appropriate **FAA NAVREP**
NAVREPEANE FAA BURLINGTON MA//JJJ//
NAVREPSO ATLANTA GA//JJJ//
NAVREPSW FT WORTH TX//JJJ//
NAVREPWP LOS ANGELES CA//JJJ//

HQ AFSC KIRTLAND AFB NM//SEFW// - **BASH** incidents

NAVMTO NORFOLK VA//JJJ//
COMNAVSUPSYSCOM WASHINGTON DC//JJJ//
NAVTRANSMGTSCOL OAKLAND CA//JJJ// - **Use all 3 for hazardous or improperly prepared or improperly shipped cargo.**

NAVSURFWARCENDIV INDIAN HEAD MD//5320// - Use if **CAD and AEPS devices** of aircrew escape systems are involved.

Other information or action addresses - If directed by controlling custodian or considered appropriate by the originator.

BT

UNCLAS FOUO //N03750//

THIS IS A GENERAL USE NAVAL AVIATION HAZARD REPORT
HMH-769, 01-00, 15 MAR 00, CH-53E, 19999X. REPORT
SYMBOL OPNAV 3750-19.

A. OPNAVINST 3750.6Q

B. Others as appropriate Example below:

C. 030100Z OCT 99 NADEP JAX ENG INVEST

1. THIS REPORT CONCERNS A (ROUTINE OR SEVERE)
HAZARD TO NAVAL AVIATION. RISK CODE (I - V). XXXXXX
ENDORSEMENT REQUESTED IAW REF A. OR ENDORSEMENT
NOT REQUIRED. SUMMARY: PITCH CONTROL ROD (PCR)
ASSEMBLIES DAMAGED DUE TO METAL-TO-METAL CONTACT AS
A RESULT OF IMPROPERLY SHIMMED PCR ENDS AND/OR
INCORRECTLY MANUFACTURED BEARING.

If it is Routine then RAC III-V and Routine Msg.

If it is Priority then RAC I-II and Priority Msg.

*Endorser - take to the highest level to fix the
hazard. If a material issue go to NAVAIRSYSCOM.*

But they normally endorse only PRI I & II's.

*Endorser not required just state so. You should
request endorsement if your corrective actions are
outside of your command.*

*Summary - Must identify the smallest COMPONENT that
failed in some MODE due to some AGENT. OR WHO did
WHAT and WHY for a Human Factors Causal Factor.*

In this particular case the C/M/A are as follows:

COMPONENT - PITCH CONTROL ROD

MODE - FRICTION (METAL-TO-METAL CONTACT)

AGENT - IMPROPERLY SHIMMED ENDS

AGENT - INCORRECT BEARING MANUFACTURE

2. DATA.

A. AIRCRAFT.

- (1) S-3B - *Model or series*
- (2) 19999X - *Bureau number*
- (3) AJ-703 - *Modex and side number*
- (4) VS-XX - *Reporting custodian*

2. DATA

A. AIRCRAFT.

- (1) CH-53E, (2) 162496, (3) MS-481, (4) HMH-769

B. EQUIPMENT. - *List all aircraft parts and other equipment involved with the hazard.*

- (1) *model*
- (2) *make*
- (3) *part number*
- (4) *equipment code*
- (5) *configuration*
- (6) *workunit code*
- (7) *etc.*

B. EQUIPMENT

- | | |
|------------------|---------------------------|
| (1) PCR ASSEMBLY | (1) PCR BEARING |
| (2) SIKORSKY | (2) KAHR BEARING DIVISION |
| (3) 65127... | (3) 97613... |
| (4) AHXD | (4) AHXD |
| (5) STANDARD | (5) STANDARD |
| (6) 310 | (6) 310 |
| (7) N/A | (7) N/A |

C. ENVIRONMENT.

- (1) date
- (2) local time
- (3) local time zone (lima/romeo)
- (4) day or night
- (5) mishap location (use all 3)

Lat/Long, Tacan cut, City and State (Jax, FL.) or geographic area (Eastern Med). If within 5nm of airfield report L/L to nearest second (decimals). If greater than 5nm use nearest minute.

Example: 32 30.5 N 078 45.2 W,
KNZC 360/4.5, NAS Cecil Field, FL.

- (6) altitude MSL or AGL specify which.
- (7) weather
- (8) background information

C. ENVIRONMENT.

- (1) 15 MAR 00, (2) 0925, (3) UNIFORM, (4) DAY,
- (5) R2515, EDWARDS AFB, CA 34 54 N 177 53 W,
- (6) NA, (7) NA, (8) NA

3. CIRCUMSTANCES.

A. EVIDENCE AND ANALYSIS. Provide a short concise description of the scenario and how the hazard occurred. Support your scenario with your evidence, Engineering Investigations, statements from aircrew, maintenance personnel etc...! Add your analysis, calculations, or speculation of the incident. Discuss the C/M/A and W/W/W within this paragraph. Ensure you completely discuss the AGENTS and WHYS. These are the items you will attempt to fix with your corrective actions.

B. CONCLUSIONS. Explain how exactly this could lead to LOSS OF AIRCRAFT OR AIRCREW = RAC I-II. OR Explain how this could lead to DAMAGE TO AIRCRAFT OR INJURY TO AIRCREW = RAC III-V.

3. CIRCUMSTANCES.

A. EVIDENCE AND ANALYSIS. DURING ROUTINE MAINTENANCE, GROUND CREW DISCOVERED METAL-TO-METAL WITNESS MARKS AT THE 3 AND 9 O'CLOCK POSITIONS ON THE CHAMBER OF THE OUTER RACE OF THE PCR END BEARING. FURTHER INVESTIGATION REVEALED ADDITIONAL WITNESS MARKS ON THE SLEEVE AND SPINDLE PITCH CONTROL HORN BUSHING AND WITNESS MARKS AT THE 3 O'CLOCK POSITION OF THE TRAILING EDGE OF THE LOWER PCR END ASSEMBLY. A CONDITIONAL INSPECTION OF THE REMAINING SQUADRON AIRCRAFT REFLECTED THE SAME DISCREPANCIES. SUSPECTING A BEARING PROBLEM, MAINTENANCE EXAMINED THE BEARING ON SUSPECT AIRCRAFT AND FOUND WHAT APPEARED TO BE A CROSS BETWEEN A 105 AND A 106 BEARING. 105 BEARINGS WERE DEEMED UNUSABLE BY THE CH-53E AIRCRAFT IN DCB 137. HOWEVER, PCRS WITH THE CORRECT 106 BEARINGS INSTALLED SHOWED DAMAGE ALSO. AN INSPECTION OF A PCR RECEIVED FROM MALS AND INSTALLED BY THE SQUADRON WAS CONDUCTED USING A DIGITAL PROTRACTOR. THE INSPECTION REVEALED RADIAL PLAY OF 30 DEGREES WHEN THE DESIGN LIMITATION IS ONLY 1 DEGREE. CONFIDENT THAT THE PCR HAD BEEN INSTALLED PROPERLY BY THE SQUADRON QA, ASSISTED BY THE SIKORSKY TECH REP, DISASSEMBLED THE PCR. THEY FOUND ONE SHIM HAD COMPLETELY DISBONDED FROM THE ROD END, THE ROD ENDS WERE NOT EQUALLY SHIMMED TO THE SAME THICKNESS PER FEF B, AND CORROSION WAS PRESENT ON BOTH SHIMS. IN AN ATTEMPT TO DETERMINE WHETHER THE SHIM PROBLEM WAS RESTRICTED TO MALS (SQUADRONS ARE NOT ALLOWED TO BOND SHIMS), QA CHECKED THE RADIAL PLAY ON A PCR WITH NO INDICATIONS OF METAL-TO-METAL CONTACT AND ORIGINALLY INSTALLED ON THE AIRCRAFT B SIKORSKY. THE PCR HAD A TOTAL OF 348.6 FLIGHT HOURS ON IT. THIS INSPECTION REVEALED RADIAL PLAY OF 37 DEGREES. A REVIEW OF REF C REVEALED THAT THE PROCEDURES ARE VAGUE, INCONCISE, AND INCOMPLETE FOR THE REPAIR AND REPLACEMENT OF PCR SHIMS. BOTH PCRS AND THE SUSPECT BEARING HAVE BEEN SENT TO NADEP FOR FURTHER INVESTIGATION.

B. CONCLUSION. FAILURE TO PROPERLY BOND/SHIM A PCR AND/OR INSTALLATION OF AN IMPROPERLY MANUFACTURED BEARING CAN CAUSE PCR ASSEMBLY FAILURE WHICH CAN LEAD TO LOSS OF AIRCRAFT AND/OR AIRCREW.

4. CORRECTIVE ACTION. *Describe what corrective actions should be taken to fix the AGENTS or WHYS that you discussed in paragraph 3 Evidence and Analysis.*

A. FOR HMH-769.

- (1) REMOVE AND INSPECT ALL PCR ASSEMBLIES FOR WITNESS MARKS AND RADIAL PLAY. ONGOING.
- (2) BRIEF THIS HAZREP TO ALL AIRCREW AND MAINT PERSONNEL. COMPLETE.

B. FOR ALL SEA STALLION SQUADRONS.

- (1) REMOVE AND INSPECT ALL PCR ASSEMBLIES FOR WITNESS MARKS AND DEGREE OF RADIAL PLAY.
- (2) BRIEF THIS HAZREP TO ALL AIRCREW AND MAINT PERSONNEL.

C. FOR NADEP.

- (1) DETERMINE AND PUBLISH CONCISE PROCEDURES FOR PROPERLY SHIMMING PCRS AT THE INTERMEDIATE LEVEL.
- (2) DETERMINE IF THE BEARING SUBMITTED IS USABLE AS AN ALTERNATE TO THE ORIGINAL DESIGN SPECIFICATION AND PUBLISH FINDING.

D. FOR COMNAVAIRSYSCOM. REVIEW MANUFACTURING PROCESS AND DETERMINE IF PCRS ARE NOT MEETING STANDARDS DUE TO IMPROPER MANUFACTURING PROCESS.

E. FOR COMNAVSAFECEN. READDRESS THIS HAZREP AS REQUIRED.

5. REMARKS. *This paragraph is used by the ASO to describe any delays in releasing the message. Such as delay in receipt of EI, depth of investigation, embarked detachment home squadron releases all HAZREPs.*

5. REMARKS.

A. NADEP HAS BEEN ALERTED TO THIS HAZARD. POC AT NADEP IS MR DAN SMITH, DSN 451-5654.

B. MAG DOSS HAS BEEN PROVIDED COPIES OF PHOTOS SHOWING DAMAGE.

6. POINTS OF CONTACT. MAJ R. BIAS, DSS, HMH-769, DSN 525-3470, COM 661-275-3470. EMAIL: BIASR(AT)MFR.USMC.MIL.

7. COMMANDING OFFICER COMMENTS. AN ALERT MAINT CREW NOTICED UNUSUAL BEARING WEAR AND WITNESS MARKS ON THE PCR ROD ENDS OF ONE OF OUR AIRCRAFT DURING A ROUTINE 50 HR INSPECTION. INSPECTION OF THE REST OF THE SQDN ACFT PRODUCED SIMILAR DISCREPANCIES. THE SUSPECTED PCR WAS REMOVED AND INSPECTED, IT WAS FOUND TO HAVE 30 DEGREES OF RADIAL PLAY (ONLY 1 DEGREE IS ACCEPTABLE) PROBABLY DUE TO IMPROPER SHIMMING. FURTHER, OUR INVESTIGATION FOUND THAT THE SQDN HAD NUMEROUS 105 BEARINGS IN STOCK WHICH WERE DEEMED UNSUITABLE. EITHER AN IMPROPERLY SHIMMED PCR OR UNAUTHORIZED USE OF 105 BEARINGS ALONE COULD VERY WELL BE THE CAUSE OF DAMAGE. A COMBINATION OF AN IMPROPERLY SHIMMED PCR AND UNAUTHORIZED BEARINGS ON THE SAME BLADE CONNECTION COULD BE DISASTROUS. UNTIL WE GET THE RESULTS OF THE EI FROM NADEP, MY COMMENTS ARE ONLY SPECULATION. HOWEVER, I RECOMMEND ALL COMMANDS SURVEY THEIR BEARING STOCK TO ENSURE NONE OF THE 105 BEARINGS ARE IN THE SYSTEM, AND CHECK TO MAKE SURE 106 BEARINGS ARE IN THE SYSTEM AND ARE MANUFACTURED TO DEPOT SPECS. CONSIDERATION SHOULD BE GIVEN TO INCORPORATING AN INSPECTION OF THE PCR ASSEMBLIES DURING PHASE TO CHECK FOR PROPER RADIAL PLAY SIMILAR TO INSPECTIONS BEING CONDUCTED BY THE CH-53D COMMUNITY. EXPECT SIGNIFICANT DELAYS IN THE SUPPLY SYSTEM IF THIS PROBLEM PROVES TO BE WIDESPREAD.//

BT

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ALL **BOLD** INFORMATION IS MANDATORY IN THE MESSAGE